

Gear Bearing Transmission for the Lunar Environment, Phase I

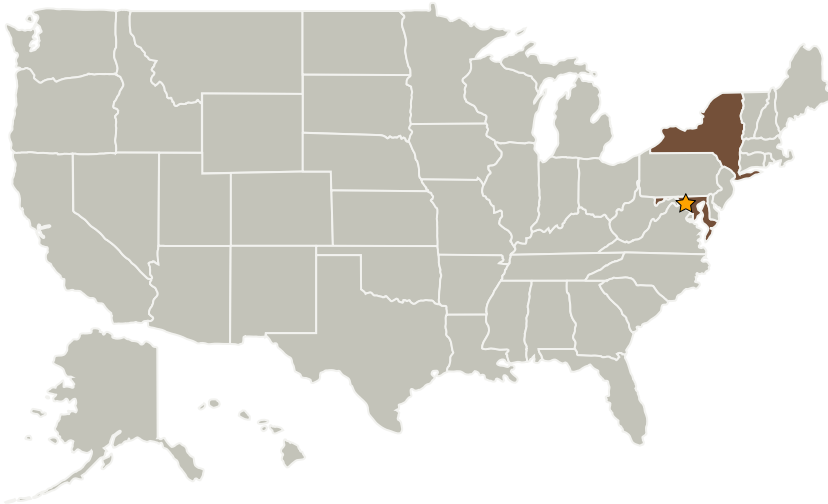
Completed Technology Project (2007 - 2007)



Project Introduction

Honeybee Robotics proposes to build upon technology we have previously developed with Goddard Space Flight Center and redesign specifically for the lunar environment a "gear bearing" transmission. We intend to bring this technology to a higher Technology Readiness Level (TRL) for the number of applications imagined for future missions to the lunar poles requiring motors and drive trains ranging from mobility systems, in situ resource utilization (ISRU) machinery, and robotic systems mechanisms. The advantages of this design lend themselves well to spaceflight mechanisms in general and specifically to the extreme conditions at the lunar poles. The high gear reductions possible within a single stage, coupled with the already compact size make gear bearing transmissions ideal for spaceflight hardware where size and weight are at a premium. The relative simplicity, the elimination of traditional bearings in the transmission, and the avoidance of sliding friction altogether have significant advantages in cryogenic and hard vacuum environments where material and lubricant selection are limited.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★ Goddard Space Flight Center (GSFC)	Lead Organization	NASA Center	Greenbelt, Maryland
Honeybee Robotics, Ltd.	Supporting Organization	Industry	Pasadena, California



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

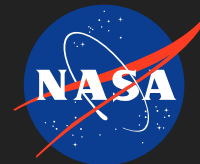
Goddard Space Flight Center (GSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Primary U.S. Work Locations

Maryland

New York

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX07 Exploration Destination Systems
 - └ TX07.1 In-Situ Resource Utilization
 - └ TX07.1.2 Resource Acquisition, Isolation, and Preparation